SAFETY CONTAINER INCLUDING SNAP-ON CAP

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References Cited

UNITED STATES PATENTS

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ABSTRACT

A safety container for pills or the like having a snap-on cap not easily opened by a small child, but readily accessible to anyone able to read simple instructions. The bottom edge of the cap snaps into place against a rim below the lip of the container. An annular groove is formed between the container lip and the rim. At one position on the rim, directed into the groove, is a first small cam tapered at both ends, is directed inwardly from the edge of the cap. The latter cam rides in the groove when the cap is rotated, permitting the lid to fit tightly on the container mouth until a position is reached, rotating in either direction, in which the two cams coincide. In this position, the cam on the cap rides up on the cam on the rim, distorting the cap so that it can easily be pushed open by the thumb of the user. Arrowheads molded into the cap and the container mouth denote the respective positions of the cams.

2 Claims, 6 Drawing Figures
SAFETY CONTAINER INCLUDING SNAP-ON CAP

BACKGROUND OF THE INVENTION

Substantial hazard exists in the use of containers for medicines and other dangerous substances which are accessible to small children too young to appreciate the nature of their contents.

Accordingly, containers have been designed from which it is difficult to remove the cap unless one follows simple written directions. Such a container with a safety closure is disclosed in U.S. Pat. No. 3,759,411 issued to the present inventor on Sept. 18, 1973. Slightly below the mouth of the container there is disclosed an outwardly extending annular rim against which the edge of the skirt of a resilient cylindrical cap seats in snap-on fashion so that the periphery of the mouth is accommodated in an annular groove on the inside wall of the cap. Between the rim and the mouth on the neck portion of the container is mounted a cam provided with a sharp abutting face on one side and a gradual slope on the other side. One or more teeth depend from the inside skirt of the cap positioned to engage the abutting face of the cam when the cap is rotated in one direction and to ride up on the cam incline when the cap is rotated in the opposite direction. In the former position, the cap locks in place and resists removal. In the latter position, the cap distorts and is readily removed. The form and relationship of the teeth and cam require that the cap be rotated in a specific direction for removal from the container mouth. Further, manipulation of this embodiment to a position for removal of the cap provides some difficulty for arthritics and other handicapped persons.

SUMMARY OF THE INVENTION

The object of the present invention is to provide an improved combination in which the cap, though still inaccessible to small children, is more readily opened by adults in response to the simple directions. Another object of the invention is to provide a combination more easily and cheaply fabricated.

These and other objects are achieved in accordance with the present invention in a combination comprising a container and a resilient cylindrical cap which seats in snapped-on relation against an annular rim near the mouth of the container. Mounted in an annular groove between the mouth of the container and the rim is a first cam provided with inclined surfaces extending in both circumferential directions. A second cam, directed inwardly from the skirt of the cap, is also inclined in both circumferential directions. When the cap snaps into place against the rim, its cam is accommodated in the annular groove on the container mouth. Each of the cam positions on the cap and container mouth is marked by an indicating arrow, and simple directions are embossed on the face of the cap. When the cap is moved in either rotational direction, so that its arrow coincides with that on the mouth of the container, the cam on the cap is caused to mount the cam on the container mouth, raising and distorting the cap, permitting it to be easily removed by the finger of the user.

The principal advantage of the combination of the present invention over the prior art is the greater speed and ease with which the container can be opened by a person understanding the simple written directions, in that the cap can be rotated in either direction to a position in which the arrows coincide. Moreover, the embossing on the face of the cap and serrations on the skirt of the cap, together with the form of the cams, permit persons with arthritis and other disabilities of the hands and fingers to readily rotate the cap in the palm of the hand, peeling the cap off when the positions of the caps coincide.

These and other objects, features and advantages will be apparent to those skilled in the art from a study of the specification hereinafter with reference to the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the container of the present invention with the cap lifted off and partially broken away to show an interior section;

FIG. 2 is a showing of the upper portion of the container of the present invention with the cap twisted to the removal position;

FIG. 3 is a perspective showing of the cap from above;

FIG. 4 is a perspective showing looking up into the cap;

FIG. 5 is a showing looking down into the mouth of the container; and

FIG. 6 is a sectional view of the cap along the plane indicated by the arrows 6—6 of FIG. 3.

DETAILED DESCRIPTION

Referring to FIG. 1, a container 1 shown in side elevation is of any of the types well-known in the art, such as, for example, a cylindrical pill box. This may be formed of any suitable material such as metal, plastic, glass, etc. In preferred form, it is of a resilient plastic, such as, for example, general purpose crystal styrene, polypropylene or high density polyethylene. The container 1 has a lip 3, flared slightly outward, which is slightly stepped back at its lower edge. Slightly below the bottom edge of the lip 3, and forming with it an annular groove 4, is an outwardly extending rim 5. Mounted on the flat upper edge of the latter is a first small cam 6, which at its maximum width extends up into the groove 4 about one-half of its width. The two ends of the cam 6 are inclined circumferentially, forming angles of, say, about 45° with its flat upper surface. The center point of cam 6 is denoted by a recess 7 in the rim 5, which is shaped like an annular bead.

The cap 8 of the container is formed of any semirigid resilient material which has the characteristic of returning quickly to its original shape when deformed, such as plastic, rubber, synthetic rubber or the like, well-known in the art. In preferred embodiment, the cap 8 comprises a tough, but resilient, plastic material, such as polyethylene of low or medium density. Cap 8 is of hollow cylindrical form, having a skirt 15, at the lower periphery of which is a flange 14, of slightly enlarged diameter, which seats against the flat upper surface of the rim 5. The inside of flange 14 comprises an annular recess 14a, the inner diameter of which just exceeds the outer diameter of the lip 3 of the container so that when the skirt is elastically extended it snaps into place on the container mouth (FIG. 5). The lip 3 of the container is accommodated and held in place in the cap above by inwardly directed ring 13 (FIG. 6). A second small cam 18, tapered at opposite ends to substantially match cam 6, is formed at one position along the interior of the recess 14a of the cap and acts as an inwardly
directed catch which is accommodated in the groove 4 near the bottle top, when the cap snaps into place. The position of cam 18 is identified on the exterior of skirt 15 by a slightly enlarged sector 14b and an integrally formed arrowhead 16. The outside of skirt 15 is provided with vertical serrations 15a around its circumference, so that the cap is readily grasped and manipulated without slipping.

On the upper face 9 of the cap 8 are embossed the simple directions "LINE ARROWS," "LIFT BELOW ARROW." A person following these directions is able to rotate the cap in either direction relative to the container mouth. Handicapped persons, with arthritis and like disabilities, are readily able to rotate the cap by applying to it the palm of the hand and using the fingers to peel off the cap when the cams coincide. When the cap is so positioned that the arrows are aligned, cam 18 on the cap 8 will mount cam 6 on the mouth of container 1, the inclined planes of both cams moving in smoothly mating relation until the cap 8 is raised up a maximum height of about one millimeter above the rim 5. This permits the user to interpose his thumbnail to remove the cap from the bottle. When replacing the cap, the user turns the arrow on the cap out of alignment with the arrow on the container mouth and snaps the cap into place against the rim.

It will be understood that this invention is not limited to the specific form of materials disclosed herein, by way of example, but only by the scope of the appended claims.

What is claimed is:

1. In a safety container having a snap-on cap with a depending skirt, said container having an annular rim near the mouth thereof which forms a seat for the peripheral edge of said cap, said rim forming with the lip of said container an annular groove, a first small cam on said container mouth having tapered sides in both circumferential directions, said cam mounted in a fixed position on said rim and extending across part of the width of said groove, a second small cam directed inwardly from the periphery of the skirt of said cap, said second cam having tapered sides in both circumferential directions, and constructed for accommodation in the groove on said container mouth when said cap snaps into place locking said cap thereon, said cap constructed to open only when rotatively positioned relative to said container mouth so that said cams coincide, thereby distorting said cap, and permitting removal thereof by slight upward pressure from the thumb or fingers of the user.

2. The combination in accordance with claim 1 wherein the positions of the cam on said cap and the cam on said container mouth are each denoted by fixed markers thereon, and wherein simple directions are embossed on the upper face of said cap.

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